



REGULATORY OVERVIEW OF RCRA & UNBURNED CARBON FLY ASH

Conference on Unburned Carbon Fly Ash

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**William R. Weissman
Piper & Marbury L.L.P.
1200 19th Street, N.W.
Washington, D.C. 20036
(202) 861-3878
(202) 223-2085 (Fax)
wweissman@pipermar.com**

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WILLIAM R. WEISSMAN*

On March 31, 1999, EPA Administrator Carol Browner signed the long-awaited Report to Congress on Wastes from the Combustion of Fossil Fuels (“Phase II RTC”), which addressed the “remaining wastes” from the combustion of fossil fuels (*i.e.*, those wastes not addressed in its initial or “Phase I” report to Congress). Publication of a notice of availability of the Phase II RTC in the Federal Register occurred on April 28th. 64 Fed. Reg. 22820. EPA invited public comment by June 14 and announced a public hearing to be held in Washington on May 21st.

I. HISTORY & BACKGROUND

A. Bevill Requirements

The 1980 Bevill Amendment to RCRA required EPA to conduct “a detailed and comprehensive study and submit a report [to Congress] on the adverse effects on human health and the environment, if any, of the disposal and utilization of fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste, and other byproduct materials generated primarily from the combustion of coal or other fossil fuels.” RCRA § 8002(n). EPA is barred from regulating those wastes under RCRA Subtitle C before six months after submittal of the Report to Congress. RCRA § 3001(b)(3)(A)(i). The original deadline for the report was October 1982.

EPA published its initial Report to Congress (“Phase I RTC”) on March 8, 1988, which covered only coal combustion wastes from electric utility power plants and certain low volume wastes co-managed with them. The Phase I RTC contained three significant findings:

- first, EPA concluded that coal combustion waste streams generally do not exhibit hazardous characteristics under current RCRA regulations, and there was no necessity to regulate under Subtitle C fly ash, bottom ash, boiler slag, and flue gas desulfurization wastes;
- second, EPA expressed concern that several other wastes from coal fired utilities may exhibit the hazardous characteristics of corrosivity or EP toxicity and merit regulation under Subtitle C; and
- third, EPA encouraged the utilization of coal combustion wastes to the extent such utilization can be done in an environmentally safe manner.

EPA Phase I RTC at ES-6 to ES-8; see also *id.* at 7-11 to 7-12. On August 9, 1993, EPA published its determination that regulation of the four large volume fossil fuel combustion

* Partner, Piper & Marbury L.L.P., 1200 19th Street, N.W., Washington, D.C. 20036.

wastes (fly ash, bottom ash, boiler slag, and scrubber sludge) as hazardous waste under RCRA is "unwarranted." 58 Fed. Reg. 42466.

B. Scope of Phase II Study and Report to Congress

Phase II of EPA's Bevill fossil fuel combustion wastes study addressed the "remaining wastes" not addressed in the 1993 regulatory determination. The Agency must complete its regulatory determination on those wastes by October 1, 1999.

The term "remaining wastes includes the following waste streams:

- fly ash, bottom ash, boiler slag, and flue gas emission control wastes from the combustion of coal by electric utility power plants, when such wastes are mixed with, co-disposed, co-treated, or otherwise co-managed with other wastes generated in conjunction with the combustion of coal or other fossil fuels; and
- any other wastes subject to section 8002(n) of RCRA, except fly ash, bottom ash, boiler slag, and flue gas emission wastes from coal combustion by electric utilities.

EPA broke the broad second category of remaining wastes into the following groupings:

- wastes from the combustion of fuel mixtures of coal and other fuels by utilities ("utility co-burning");
- wastes from the combustion of coal by non-utilities;
- wastes from fluidized bed combustion of fossil fuels by utilities and non-utilities;
- wastes from the combustion of oil by utilities and non-utilities; and
- wastes from the combustion of natural gas by utilities and non-utilities.

Phase II RTC, Vol. 2 at 1-2. The co-managed utility low volume wastes under study generally include the following waste streams:

- coal pile runoff;
- coal mill rejects/pyrites;
- boiler blowdown;
- cooling tower blowdown and sludge;
- water treatment sludge;
- regeneration waste streams;

- air heater and precipitator washwater;
- boiler chemical cleaning waste;
- floor and yard drains and sumps;
- laboratory wastes; and
- wastewater treatment sludge.

Id. at 3-2 to 3-3.

II. CO-MANAGED WASTES AT COAL-FIRED UTILITIES (RTC Chapter 3)

EPA made the following preliminary findings regarding the remaining wastes from utility coal combustion facilities:

- (1) generally, the disposal of co-managed wastes should remain exempt from Subtitle C;
- (2) most beneficial uses should remain exempt from Subtitle C;
- (3) some form of Subtitle C regulation could be warranted for agricultural uses of these wastes; and
- (4) EPA is concerned with mine placement of these wastes, but there currently is insufficient information to make a conclusion regarding this beneficial use.

A. Co-Management in General

EPA determined that co-managed wastes from coal-fired utilities (including petroleum coke wastes) “generally present a low inherent toxicity, are seldom characteristically hazardous, and generally do not present a risk to human health and the environment.” Phase II RTC, Vol. 2 at 3-73. Although EPA’s groundwater risk assessment indicated that arsenic was generally a constituent of concern, EPA tentatively concluded “that Subtitle C is inappropriate to address any problems associated with disposal of these wastes and that the continued use of site and region specific approaches by the states is more appropriate for addressing the limited human health and environmental risks that may be associated with disposal of these wastes.” Phase II RTC, Vol. 1 at 3-5.

Despite its modeling conclusions, EPA was apparently comforted by current industry management practices and trends, the relatively high level of existing State and Federal regulation, and the relative lack of damage cases. It was also discouraged by the economics of regulatory action. EPA recognized the industry trend to line disposal units and use dry ash handling systems, citing with approval that more than half of the landfills and one quarter of the impoundments are currently lined. Furthermore, EPA’s economic analysis led it to conclude that

the costs to mitigate the modeled arsenic risks through imposition of RCRA Subtitle D controls would be approximately \$800 million industry-wide, a reduction of net income as a percentage of revenues of 1.5 to 2.1 percent per plant. The costs of Subtitle C regulation would be roughly three times that amount. Phase II RTC, Vol. 2 at 3-73.

EPA made a positive finding regarding mill rejects management. EPA concluded that “additional regulation of pyrite disposal is not necessary,” noting the industry’s voluntary program to ensure proper management. Id.

B. Beneficial Uses

1. General

EPA’s investigation of the beneficial use of coal combustion byproducts (“CCBs”) generally revealed no damage cases, and resulted in the conclusion that “[n]o significant risks to human health and the environment were identified or believed to exist” due to fixation of the waste in finished products and/or low probability of human exposure to the material. Phase II RTC, Vol. 2 at 3-74. EPA’s broad finding applies to all existing beneficial uses except for mine placement and agricultural use.

2. Agricultural Use

EPA’s concern with the agricultural use of co-managed wastes derives from its multi pathway (non-groundwater) risk assessment. EPA found that “[t]he risks identified with this practice are of sufficient concern to consider whether some form of control under Subtitle C is appropriate, given the increasing trend for use of these materials as agricultural amendments.” Phase II RTC, Vol. 2 at 3-75.

EPA stated generally that possible Subtitle C controls could include “regulation of the content of these materials such that arsenic concentrations could be no higher than that found in agricultural lime.” Id. Alternatively, in lieu of Subtitle C controls, EPA indicated that it might consider a voluntary program with the industry that would result in a limitation on arsenic levels.

3. Mine Placement

The Agency’s concerns with the mine placement of CCBs emerged only recently, at the study’s eleventh hour. As a result, EPA was prepared to go no further in the Phase II RTC than express reservations regarding the practice and defer any findings until the regulatory determination. See Phase II RTC, Vol. 2 at 3-75. EPA found it difficult in the limited time that it investigated the issue to distinguish the effects of mine placement activities from pre-existing environmental concerns, such as acid mine drainage. Furthermore, EPA was unequipped to model the hydrogeological characteristics of the post-mining environment.

The Agency acknowledged that, should a problem be established, the resolution “may require very site-specific determinations that do not lend themselves to national standards.” Id. EPA

invited public comment on whether there are some minefill practices that are universally poor and warrant specific attention.” Id.

III. UTILITY OIL COMBUSTION WASTES (RTC Chapter 6)

EPA concluded positively that oil combustion wastes pose no significant ecological risks, “are seldom characteristically hazardous and may not present a significant risk to human health and the environment.” Id. at 6-37. However, its groundwater pathway risk assessment results caused concern with management of these wastes in unlined units, particularly co-management in settling basins and impoundments that are designed and operated to discharge to groundwater. Id. at 6-38. EPA identified arsenic, nickel, and vanadium as the metals of concern, with nickel and vanadium modeled to exceed health based levels at the hypothetical receptor well location in 50 and 10 years respectively. Id. at 6-22.

In response to the modeled risk, EPA identified two responses under consideration – regulation under Subtitle C or reliance on implementation of voluntary controls by the industry. EPA recognized the industry and State regulatory trend to line new units, and the Agency welcomed “anecdotal information that some facilities are preparing to either line or close their unlined units.” Id. at 6-38.

IV. FLUIDIZED BED COMBUSTION WASTE (RTC Chapter 5) AND NON-UTILITY COAL COMBUSTION WASTES (RTC Chapter 4)

EPA also tentatively concluded that disposal of fluidized bed combustion (“FBC”) wastes and non-utility coal combustion wastes should remain exempt from RCRA Subtitle C. Phase II RTC, Vol. 2 at 5-35, 4-33. This conclusion extends to FBC wastes from petroleum coke combustion, FBC wastes from other fuels co-fired with coal, and also co-managed low volume FBC wastes. Both sets of wastes “generally present a low inherent toxicity, are seldom characteristically hazardous, and generally do not present a risk to human health and the environment.” Id. EPA’s conclusions regarding beneficial uses of these wastes likewise paralleled the coal combustion waste conclusions discussed above – i.e., most beneficial uses should remain exempt from Subtitle C regulation, agricultural use is under consideration for Subtitle C or voluntary controls, and mine placement applications remain under investigation. Id. at 5-35, 4-34.